

IN THE CLAIMS

Please amend the claims as follows:

Claims 1-21 (Canceled).

Claim 22 (New): A method for cleaning a surface of a conductive layer on a semiconductor substrate placed in a reaction chamber,
wherein plasma containing hydrogen is generated in the reaction chamber, and the surface of the conductive layer is cleaned by being reduced therewith.

Claim 23 (New): The method of claim 22, wherein residual organic material on the surface of the conductive layer is ashed by the plasma.

Claim 24 (New): The method of claim 22, wherein an insulating layer is formed on the surface of the conductive layer, a via hole for exposing a part of the conductive layer is formed in the insulating layer, and the surface of the conductive layer exposed through a bottom portion of the via hole is cleaned by the plasma.

Claim 25 (New): The method of claim 24, wherein an upper insulating film is further formed on the insulating layer, and a wiring trench for exposing the via hole is formed in the upper insulating film, the exposed surface of the conductive layer being cleaned by the plasma after the upper insulating film has been formed.

Claim 26 (New): The method of claim 22, wherein a density of the plasma is 10^{10} to $10^{13}/\text{cm}^3$.

Claim 27 (New): The method of claim 22, wherein an electron temperature of the plasma is 0.7 to 3 eV.

Claim 28 (New): The method of claim 26, wherein an electron temperature of the plasma is 0.7 to 3 eV.

Claim 29 (New): The method of claim 26, wherein the plasma is generated by using a planar antenna.

Claim 30 (New): The method of claim 26, wherein the plasma is inductively coupled plasma or magnetron plasma.

Claim 31 (New): The method of claim 29, wherein the high density plasma processing is performed by forming a uniform electric field in the reaction chamber, the high density plasma being generated using microwave.

Claim 32 (New): The method of claim 26, wherein the plasma containing the hydrogen further contains Ar gas.

Claim 33 (New): The method of claim 26, wherein the plasma containing the hydrogen further contains Ar gas and He gas.

Claim 34 (New): The method of claim 26, wherein the plasma containing the hydrogen further contains He gas.

Claim 35 (New): The method of claim 22, wherein the plasma processing is performed under an atmosphere of a gaseous mixture containing hydrogen and helium, and flow ratio of the helium with respect to the hydrogen is set to be 0.005 to 20.

Claim 36 (New): The method of claim 23, wherein the plasma processing is performed under an atmosphere of a gaseous mixture containing hydrogen and helium, and flow ratio of the helium with respect to the hydrogen is set to be 0.005 to 20.

Claim 37 (New): A storage medium storing software for performing a cleaning method for cleaning a surface of a conductive layer on a semiconductor substrate in a reaction chamber, the cleaning method comprising:

generating plasma containing hydrogen in the reaction chamber; and
cleaning the surface of the conductive layer by reducing the surface of the conductive layer.

Claim 38 (New): The storage medium of claim 37, wherein a residual organic material on the surface of the conductive layer is ashed by the plasma.

Claim 39 (New): The storage medium of claim 37, wherein an insulating layer is formed on the substrate of the conductive layer, a via hole for exposing a part of the conductive layer is formed in the insulating layer, and the surface of the conductive layer exposed through a bottom portion of the via hole is cleaned using the plasma.

Claim 40 (New): The storage medium of claim 39, wherein an upper insulating film is further deposited on the insulating layer, and a wiring trench for exposing the via hole is

formed in the upper insulating film, the exposed surface of the conductive layer being cleaned using the plasma after the upper insulating film has been formed.

Claim 41 (New): The storage medium of claim 37, wherein the cleaning is performed by a high density plasma processing at a low electron temperature, and the generating plasma is performed by forming a uniform electric field in the reaction chamber, a high density plasma being generated using microwave.

Claim 42 (New): The storage medium of claim 38, wherein the generating plasma is performed under an atmosphere of a gaseous mixture containing hydrogen and helium, and ratio of the helium with respect to the hydrogen is set to be 0.005 to 20.